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land County, and since that time the writer has examined two specimens from the collection of the Michigan Agricultural College, both of which were secured near East Lansing, one on April 20, 1901, by D. S. Bullock, and the other in August, 1896, by T. L. Hankinson.

Another species apparently new to the Michigan fauna is Richardson's shrew, *Sorex richardsonii* Bachman, a specimen of which, taken at Chatam, Alger County, August 28, 1900, is in the collection of the Michigan Agricultural College. Although Seton¹ includes the northern peninsula in his map of the range of the species, the writer can find no recorded localities nearer than Oneida County, Wisconsin,² and the north shore of Lake Superior. Northern Michigan has probably been included in the range because this region formed a part of the "Northwest Territory"; it is not included by Merriam.³

The museum is indebted to the U. S. Biological Survey for verifying the identification of the specimens mentioned, and to Professor W. B. Barrows, for the loan of the specimens in the Michigan Agricultural College.

NORMAN A. WOOD

MUSEUM OF NATURAL HISTORY,
UNIVERSITY OF MICHIGAN

INTERGLACIAL RECORDS IN NEW YORK

IN Professor H. L. Fairchild's most interesting address on "Pleistocene Geology of New York State" the following statement appears:¹

The accepted facts of multiple glaciation in the Mississippi basin coupled with proofs of Pre-wisconsin drift in Pennsylvania and New Jersey and on Long Island, with accumulating evidences in New England, demands the theoretical acceptance of at least dual glaciation for New York state. But the positive proof, in the field, of a Pre-wisconsin ice sheet has not been found.

¹"Life Histories of Northern Animals," Vol. II, p. 1107.

²Hartley H. T. Jackson, *Bull. Wisconsin Natural History Society*, 1908, pp. 30-31.

³"North American Fauna," No. 10, p. 48.

¹SCIENCE, XXXVII., No. 946, p. 238.

A few years ago, Miss Maury² reported an interglacial deposit at the south end of Cayuga Lake, on the west shore between "Taughan-nock Falls and Frontenac Beach in a small ravine which has cut through one of the delta terraces so common in Cayuga Valley." An exposure gave the following vertical section:

Drift	20 to 30 feet.
Gravel and sand	several inches.
Fossiliferous clay	10 to 15 feet.
Boulder clay	10 to 15 feet.
Devonian shales	10 feet above lake level.

The lower boulder clay is thought to represent the Illinoian invasion and is oxidized, indicating a period of exposure to the air and hence of erosion. The lower deposits are peaty and contain a quantity of plant remains. The upper fossiliferous deposits are a slaty blue clay in which mollusks to the number of eighteen species are found in abundance. Twelve of these molluscan species are also found in the interglacial Don beds of Toronto, and the lake in which these animals lived was doubtless contemporaneous with the large Ontario Lake in which the Don mollusks lived. The thickness of the clay deposits (10-15 feet) indicates a long period of deposition.

In the Watkins Glen-Catatonk Folio of New York,³ page 26, reference is made to an older drift in Watkins Glen, underlying 100 feet of Wisconsin drift. In the blue clay underlying the drift and overlying a bed of sand and gravel, the leaf of an arctic willow (*Salix reticulatus*) was found. Though this deposit is stated by the authors to have probably been laid down during the advance of the Wisconsin ice sheet, the inference is strong, in view of the Cayuga Lake and the Toronto interglacial deposits, in favor of its being contemporaneous with the Scarboro beds near Toronto which contain cold climate animals and plants, including an undermined willow (*Salix* sp.). The evidence of this Cayuga Lake deposit appears to be quite as conclusive as is that of the Toronto deposits.

²*Journal of Geology*, XVI., pp. 565-567, 1908.

³Geologic Atlas, No. 169, 1909.

It is quite probable that well records in western New York will supply additional interglacial records as has been so abundantly done by the well records of Minnesota, Iowa and Ohio. The records in New York state referred to above, while few in number, are still of a character to supply indubitable proof of a Prewisconsin ice invasion in this territory.

During the work of compiling literature relating to the life of postglacial and interglacial deposits, it was observed that little or no attention had been given by New York geologists to the fresh-water life of the ancient lakes of the Champlain substage. The gravels of the Niagara River⁴ and certain deposits at Ithaca⁵ appear to be the only localities from which life has been definitely reported. Many years ago Hall⁶ reported *Unios* and wood from the ridge bordering the south side of Lake Ontario, which marks the shore of the glacial Lake Iroquois. A careful study of this old beach and especially of bays or lagoons behind the beach proper will surely produce results similar to those obtained by Professor Coleman at Toronto.⁷

FRANK COLLINS BAKER

CHICAGO ACADEMY OF SCIENCES

THE PRODUCTION IN KITTENS INOCULATED WITH
ENTAMOEBA TETRAGENA OF PATHOLOGICAL
FORMS IDENTICAL WITH ENTAMOEBA
HISTOLYTICA

TO THE EDITOR OF SCIENCE: Schaudinn stated that the reproduction of *E. histolytica* by sporulation "occurs after a period of lively increase when the conditions of life have deteriorated. In dysentery this is simultaneous with the commencement of healing."

I have been able recently by the rectal inoculation of a succession of kittens with trophozoites of *E. tetragena* to observe during a "period of lively increase" the adolescent trophozoite gradually become reduced in size and to note the production of chromidia in

large amount in every individual. This appeared first in the third remove as fine particles in the cytoplasm. In the fourth remove, collections of large particles were seen. The nucleus took on the characters of *E. tetragena*, i. e., prominent karyosome, and at the time of death of the last set of kittens in the fourth remove, typical *tetragena* cysts were seen, but associated with them were forms in which bizarre appearances identical with those figured by Hartmann from Schaudinn's *histolytica* preparations were seen. These are certainly manifestations of pathological cell changes, and represent dislocations of the nucleus, karyorrhexis, karyolysis and extrusion of the nucleus. Many so-called buds were seen, a number of which had become detached from the parent body after the extrusion of chromidia. This budding process seems to be analogous to certain pathological changes in the cytoplasm of mononuclear metazoan cells, for example, in lymphocytes and plasma cells.

The production of budding and other pathological forms identical with the descriptions and drawings of *E. histolytica*, but produced in kittens in a senile precystic race of *E. tetragena* associated with typical *tetragena* cysts indicates almost certainly that *E. histolytica* is a spurious species, having been described by Schaudinn and Craig from senile races of *E. tetragena*.

S. T. DARLING

ANCON HOSPITAL

INDOOR HUMIDITY

TO THE EDITOR OF SCIENCE: In view of the present-day discussion of the subject of indoor humidity some experiments recently carried out by the writer may be of interest to those who, like himself, have been bothered by the bugbear of the "70 per cent." which seems to be the optimum value according to most authorities.

Inside the casing of the hot-air furnace, and right on the dome or hottest part of the firebox, was placed a cast-iron pan with bottom shaped to fit closely. By a simple automatic device connected with the plumbing this was kept full of water, which was found

⁴Letson, *Bull. Buf. Soc.*, N. S., VII, pp. 238-252, 1901.

⁵Tarr, *Journ. of Geol.*, XII, p. 79.

⁶"Geology of New York," Part IV.

⁷*Bull. Geol. Soc. Amer.*, XIV., pp. 347-368.